

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : DAIKIN IND LTD

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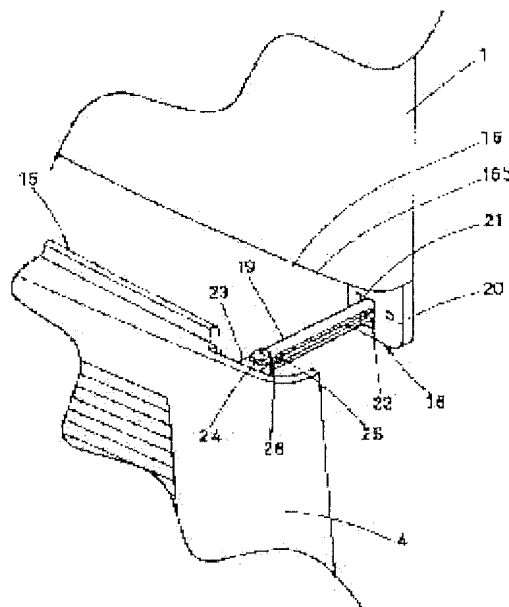
(72)Inventor : MORISANE TETSUYA  
SATO YOSHIKAZU  
TANAKA TOSHIYUKI

## (54) FLOOR TYPE AIR CONDITIONER

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To cope with both of safety and the reduction of cost by a method wherein the opening degree regulation and the closure retention of a suction grille are permitted by one member.

**SOLUTION:** In a floor type air conditioner, the upper end of a suction grille 4 is connected to the upper opening rim 16b of a suction opening 16 through a connecting member 19, whose one end is connected detachably to the suction grille 4 and whose the other end is engaged with a retaining unit 18 provided on the upper end opening rim 16b of the suction opening 16, while the connecting member 19 is provided with an opening degree regulating unit, regulating the opening degree of the suction grille 4 so as to have a size permitting the removing operation of a filter 15 but not permitting the insertion of a finger, and a positioning unit, retaining the suction grille 4 under the closure of the same. When the opening operation of the suction grille 4 is effected upon exchanging the filter, the opening degree of the suction grille 4 is controlled by the opening degree regulating unit of the connecting member 19 so as to have the size permitting the removal operation of the filter 15 but not permitting the insertion of a finger while the closure of the grille 4 can be retained by the positioning unit of the connecting member 19 upon closing the suction grille 4.



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## CLAIMS

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[Claim(s)]

[Claim 1] Allocate a fan (2) and a heat exchanger (3) in a casing (1) characterized by comprising the following, and in a front face of said casing (1). A floor type air conditioner which established a suction grill (4) provided with a filter (15) which can be taken out by making the lower end part into a fulcrum from the upper part in this intake opening (16) enabling free opening and closing while forming an intake opening (16) located in the front-face side of said fan (2).

An upper bed part of said suction grill (4), and upper bed peristome (16b) of said intake opening (16), While one end is combined with said suction grill (4), enabling free removal and the other end connects by a connecting member (19) which engages with a suspending portion (18) provided in said intake opening upper bed peristome (16b), An opening restricting part which regulates an opening of said suction grill (4) in this connecting member (19) at a size in which removal operation of said filter (15) is possible and, which cannot insert fingers.

A positioning part which holds said suction grill (4) to a closed condition.

[Claim 2] While constituting said connecting member (19) from a member of hairpin shape which consists of a straight part (19a) of a couple, (19b) and this straight part (19a), and a U character shaped part (19c) that connects an end of (19b), While said opening restricting part is constituted from a U character shaped part (19c) of said connecting member (19), Said floor type air conditioner according to claim 1 constituting said positioning part from a straight part (19a) of a couple of said connecting member (19), and the heights (25) and (25) of a couple which used (19b) for relativity and was formed.

[Claim 3] A floor type air conditioner of said claim 1 combining said connecting member (19) and said suction grill (4) by a coupling means (24) by which connection release is carried out only when a tool etc. are used, and claim 2 given in any 1 paragraph.

[Claim 4] In said connecting member (19). A floor type air conditioner of said claim 1 attaching a slip off stop means (26) to prevent omission from said suspending portion (18) of said connecting member (19) in the state where combination with this connecting member (19) and said suction grill (4) was canceled thru/or claim 3 given in any 1 paragraph.

[Claim 5] In a lower end part of said suction grill (4). In [ it is engaged to a locking hole (27) formed in lower end peristome (16a) of said intake opening (16), and become an opening-and-closing fulcrum of this suction grill (4), and ] the time of an open operation more than a prescribed opening of said suction grill (4). A floor type air conditioner of said claim 1 providing a lock projection (28) of which said engagement is canceled thru/or claim 4 given in any 1 paragraph.

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The invention in this application relates to the opening regulating structure of the suction grill in a floor type air conditioner in more detail about a floor type air conditioner.

[0002]

[Description of the Prior Art]Generally a floor type air conditioner allocates a fan and a heat exchanger in the casing of longwise rectangular parallelepiped shape, It is constituted so that it may blow off from the blow-off grill in which the harmony air cooled, or heated and obtained by said heat exchanger in the indoor air inhaled from the suction grill established in the front face of said casing was provided by the front face of said casing to the interior of a room (for example). Refer to JP,1-167544,U.

[0003]By the way, in a floor type air conditioner, there are two kinds such as the type which allocates a fan in the leeward side (namely, the blow-off grill side) of a heat exchanger, and the type which allocates a fan in the windward (namely, the suction grill side) of a heat exchanger. Since the filter for performing dust removing of suction air is built in the suction grill, it is necessary to exchange filters and to enable opening and closing of a suction grill to a casing.

[0004]However, if the opening is freed when opening and closing of a suction grill are enabled, as described above, If there is a possibility of inserting a hand in an inner direction accidentally from the opening and rotary machines, such as a fan, are allocated in the inner direction when the open operation of the suction grill is carried out greatly, a hand may touch a rotary machine. In the case of what is the windward of a heat exchanger and formed the fan in the lower part in a casing especially, the above-mentioned anxiety becomes much more remarkable from the place where the position of a suction grill becomes low.

[0005]When apparatus, such as a fan, is allocated in the inner direction of a suction grill and maintenance inspection of these apparatus is performed, it is necessary to make a suction grill into an opened state.

[0006]Then, these people between a suction grill and a casing, While regulating the opening of said suction grill in the size in which the detaching operation of said filter is possible and which cannot insert fingers, what interposed the opening regulating means of which this regulation can be canceled is proposed (refer to Japanese Patent Application No. No. 292896 [ eight to ]).

[0007]

[Problem(s) to be Solved by the Invention]However, when it is the above-mentioned prior example, in order to hold the closed condition of a suction grill of what can regulate the opening of a suction grill by an opening regulating means, the magnet which is a separate member as holding mechanism is used. That is, the opening regulating means which regulates the opening of a suction grill, and the magnet holding the closed condition of a suction grill are needed, and it leads to increase of part mark, increase of component cost, and increase of a man day with a group.

[0008]The invention in this application was made in view of the above-mentioned point, and an object of the invention in this application is to make it obtain by performing opening regulation of a suction grill, and closed condition maintenance, to have them by one member, and to reconcile safety and cost reduction.

[0009]

[Means for Solving the Problem]While forming the intake opening 16 which allocates the fan 2 and the heat exchanger 3 in the casing 1, and is located in said casing 1 front face as a means for solving an invention of claim 1, and an aforementioned problem at the front-face side of said fan 2, A floor type air conditioner which established the suction grill 4 provided with the filter 15 in which attachment and detachment which can be taken out are free by making the lower end part into a fulcrum from the upper part in this intake opening 16 enabling free opening and closing is provided with the following.

An upper bed part of said suction grill 4, and the upper bed peristome 16b of said intake opening 16, While one end is combined with said suction grill 4, enabling free removal and the other end connects by the connecting member 19 which engages with the suspending portion 18 provided in said intake opening upper bed peristome 16b, An opening restricting part which regulates an opening of said suction grill 4 to this connecting member 19 at a size in which removal operation

of said filter 15 is possible and, which cannot insert fingers.  
A positioning part which holds said suction grill 4 to a closed condition.

[0010]Although the open operation of the suction grill 4 is carried out by having constituted as mentioned above at the time of filter replacement, the suction grill 4 is regulated by an opening restricting part of the connecting member 19 by size in which the opening of removal operation of the filter 15 is possible and which cannot insert fingers in that case. Therefore, although exchange of the filter 15 can be performed easily, fingers cannot be put into a method of the inside of the casing 1, but touching a rotary machine of fan 2 grade carelessly located in an inner direction is lost. A closed condition will be held by positioning part of the connecting member 19 at the time of stoppage of the suction grill 4. That is, the connecting member 19 which is one member can perform opening regulation of the suction grill 4, and closed condition maintenance of the suction grill 4. And if the connecting member 19 is removed from the suction grill 4, the suction grill 4 can be opened freely and can perform easily maintenance inspection of apparatus of fan 2 grade currently allocated by method of the inside of the casing 1.

[0011]While constituting from a member of hairpin shape which consists of the U character shaped part [ as / in an invention of claim 2 ] 19c which connects an end of the straight parts 19a and 19b of a couple, and these straight parts 19a and 19b for said connecting member 19, It becomes structurally easy when it is constituted from the heights 25 and 25 of a couple which made said positioning part for relativity the straight parts 19a and 19b of a couple of said connecting member 19, and was formed, while said opening restricting part is constituted from the U character shaped part 19c of said connecting member 19.

[0012]As in an invention of claim 3, said connecting member 19 and said suction grill 4, Since engagement to the connecting member 19 and the suction grill 4 cannot be canceled if a tool etc. are not used when it joins together by the coupling means 24 by which connection release is carried out only when a tool etc. are used, it is lost that the suction grill 4 is opened wide carelessly.

[0013]When a slip off stop means 26 to prevent omission from said suspending portion 18 of said connecting member 19 in the state [ as / in an invention of claim 4 ] where combination with this connecting member 19 and said suction grill 4 was canceled to said connecting member 19 is attached, It is lost that the connecting member 19 falls out in the casing 1, and workability when returning the suction grill 4 from an opened condition improves.

[0014]As in an invention of claim 5, in a lower end part of said suction grill 4. When the lock projection 28 of which it is engaged to the locking hole 27 formed in the lower end peristome 16a of said intake opening 16, and becomes an opening-and-closing fulcrum of this suction grill, and said engagement is canceled at the time of an open operation more than a prescribed opening of said suction grill 4 is formed, It becomes possible to remove the suction grill 4 more than a prescribed opening, and various maintenance inspection services inside from the intake opening 16 can be offered easily.

[0015]

[Embodiment of the Invention]Hereafter, with reference to an attached drawing, the suitable embodiment of the invention in this application is explained in full detail.

[0016]This floor type air conditioner allocates the fan 2 and the heat exchanger 3 in the casing 1 of longwise rectangular parallelepiped shape, as shown in drawing 1 and drawing 2, The indoor air W inhaled from the suction grill 4 established in the intake opening 16 formed in the front lower part of said casing 1 by said heat exchanger 2. It is constituted so that it may blow off from the blow-off grill 5 in which harmony air W' produced by cooling or heating was provided in the front top of said casing 1 to the interior of a room.

[0017]Said fan 2 is used as the centrifugal type blower which wraps the multi vane impeller 8 entirely by the scroll type fan casing 9, and is allocated in the fan room 6 formed in the inner direction of said suction grill 4 with the posture which made the suction opening 10 positive. and -- the delivery 11 of said fan 2 penetrates the divider plate 12 which divides the inside of said casing 1 into said fan room 6 and the heat exchange room 7 in which it is located above this fan room 6 -- said heat exchange room 7 -- \*\*\*\*\* -- having -- \*\*\*\* .

[0018]The inside of said heat exchange room 7 is divided into a cross direction, and an upper bed is located back, and said heat exchanger 3 is allocated so that a lower end may serve as an inclination posture located ahead. The numerals 13 are drain pans.

[0019]And a front difference of said suction grill 4 is made possible by making the lower end side into an opening-and-closing fulcrum by engagement to the locking hole 27 and the lock projection 28 which are behind explained in full detail to the lower end peristome 16a of said intake opening 16, and it is built in the inside, enabling free attachment and detachment of the filter 15. It is to insert and pull out this filter 15 and to be carried out from the upper bed side, to the filter frame 17 formed in said suction grill 4.

[0020]As it is indicated in drawing 3 as the upper bed peristome 16b of the upper bed part both sides of said suction grill 4, and said intake opening 16, one end is combined with said suction grill 4, enabling free removal, and the other end is connected by the connecting member 19 which engages with the suspending portion 18 provided in said intake opening upper bed peristome 16b.

[0021]Said connecting member 19 comprises a member of the hairpin shape which consists of the U character shaped part 19c which connects the end of the straight parts 19a and 19b of a couple, and these straight parts 19a and 19b, as shown in drawing 4 and drawing 5. The lower part [ straight part / 19a / in said connecting member 19 / top ] straight part 19b is shortened a little.

[0022]On the other hand, said suspending portion 18 is installed from the both-the-right-and-left-ends part of the upper bed peristome 16b of said intake opening 16, and said connecting member 19 is used as the protruded piece 20 which has the engaging hole 21 inserted enabling free sliding, The level locking rod 22 sandwiched by the straight parts 19a and 19b of said connecting member 19 is formed in this engaging hole 21.

[0023]The end of the top straight part 19a of said connecting member 19 is combined on the screw 24 to the boss 23 formed in the upper bed part both sides of said suction grill 4 (refer to drawing 3). That is, said connecting member 19 is attached by inserting said straight parts 19a and 19b in said engaging hole 21, where said locking rod 22 is put while carrying out the screw stop of the end of the top straight part 19a to said boss 23. Therefore, in order to cancel combination with the connecting member 19 and the suction grill 4, the screw 24 must be unscrewed using tools, such as a driver, and it is lost that the suction grill 4 is opened wide carelessly.

[0024]And when the open operation of said suction grill 4 is carried out, let the top straight part 19a in said connecting member 19 be the length which may be regulated by the size in which the opening of the removal operation of said filter 15 is possible and, which cannot insert fingers by engagement to said U character shaped part 19c and the locking rod 22. That is, said U character shaped part 19c is to act in this embodiment as an opening restricting part which regulates the opening of the suction grill 4 in the size in which the removal operation of said filter 15 is possible and, which cannot insert fingers.

[0025]As shown in drawing 4 and drawing 5, the heights 25 and 25 of the couple are formed in the field which carries out for relativity in the straight parts 19a and 19b in said connecting member 19 at one. The closed condition of the suction grill 4 is to form these heights 25 and 25 in the position which can overcome said locking rod 22 in the state where the suction grill 4 was stopped, and to be held in the state where said heights 25 and 25 overcame said locking rod 22. That is, said heights 25 and 25 are to act as a positioning part holding the closed condition of the suction grill 4.

[0026]To the both side surfaces of the top straight part 19a in said connecting member 19. As shown in drawing 4 and drawing 5, the projections 26 and 26 which act as a slip off stop means to prevent said connecting member 19 from falling out from said suspending portion (specifically engaging hole 20) in the state where combination with this connecting member 19 and said suction grill 4 was canceled are formed in one. When inserting the top straight part 19a of the connecting member 19 in the engaging hole 20, it can insert easily, but when it slides in the direction of an omission, let these projections 26 and 26 be the shape (namely, wedge shape) stopped by the peristome of the engaging hole 20. If it does in this way, it will be lost that the

connecting member 19 falls out in the casing 1, and workability when returning the suction grill 4 from an opened condition will improve.

[0027]In the lower end part of said suction grill 4, as shown in drawing 6, The lock projection 28 of which it is engaged to the locking hole 27 formed in the lower end peristome 16a of said intake opening 16, and becomes an opening-and-closing fulcrum of this suction grill 4, and said engagement is canceled at the time of the open operation more than the prescribed opening of said suction grill 4 is formed. If it does in this way, it becomes possible to remove the suction grill 4 more than a prescribed opening, and various maintenance inspection services inside from the intake opening 16 can be offered easily.

[0028]The following operation effects are obtained in the floor type air conditioner constituted as mentioned above.

[0029]As shown in drawing 6 at the time of stoppage of the suction grill 4, since it changes the connecting member 19 into the state where it was pushed into the inner direction in both sides of the intake opening 16, it does not become the obstacle of the indoor air W inhaled via the suction grill 4, and a possibility of increasing distribution resistance and a sound does not have it. At this time, the heights 25 and 25 which act as a positioning part in the connecting member 19 will overcome the locking rod 22 in the suspending portion 18, and will be engaged, and it changes them into the state (that is, the suction grill 4, stoppage holding state) where operation to the direction of an open operation of the suction grill 4 cannot be performed.

[0030]If dust etc. adhere to the filter 15 by operation of an air conditioner and blinding is caused, it is necessary to exchange the filter 15 from the place which influences the capability of an air conditioner. Although the open operation of the suction grill 4 is carried out at this time, the connecting member 19 will slide to the front in connection with the open operation of the suction grill 4, and as shown in drawing 7, U character shaped part 19c which acts as an opening restricting part engages with the locking rod 22 in the suspending portion 18. The opening alpha of the suction grill 4 is regulated in this state by the size (for example, about 3 degrees) in which extraction operation of said filter 15 is possible and which cannot insert fingers. Therefore, although the filter 15 can be easily pulled out from the upper part side of the suction grill 4 or can be inserted, since the opening of the suction grill 4 is regulated, it is lost that a user inserts fingers in the method of the inside of the casing 1 carelessly. That is, although exchange of the filter 15 can be performed easily, it is lost that a user's fingers touch the rotary machine of the fan 6 grade located in the inner direction of the suction grill 4, and safety's improves.

[0031]By the way, in that case, although maintenance inspection to the apparatus (for example, the fan 2, piping, etc.) which opens the suction grill 4 wide and is located in an inner direction may be performed, if said screw 24 is unscrewed by tools, such as a driver, as shown in drawing 8, combination with the suction grill 4 and the connecting member 19 will be canceled. Therefore, opening regulation will be canceled, and the suction grill 4 will be opened wide freely, and can perform said maintenance inspection work easily.

[0032]When the open operation of said suction grill 4 is carried out more than the prescribed opening beta, it will deviate from the locking hole 27 where the lock projection 28 formed in the lower end part was formed in the lower end peristome 16a of the intake opening 16, The suction grill 4 can be removed from the intake opening 16, and various maintenance inspection services inside from the intake opening 16 can be offered easily.

[0033]In the above-mentioned embodiment, although he is trying to constitute the connecting member 19 from a hairpin-shaped member, the connecting member 19 can also be made into other shape.

[0034]

[Effect of the Invention]While forming the intake opening 16 which allocates the fan 2 and the heat exchanger 3 in the casing 1, and is located in said casing 1 front face at the front-face side of said fan 2 according to the invention of claim 1, In the floor type air conditioner which established the suction grill 4 provided with the filter 15 in which the attachment and detachment which can be taken out are free by making the lower end part into a fulcrum from the upper part in this intake opening 16 enabling free opening and closing, The upper bed part of said suction grill 4, and the upper bed peristome 16b of said intake opening 16, While one end is

combined with said suction grill 4, enabling free removal and the other end connects by the connecting member 19 which engages with the suspending portion 18 provided in said intake opening upper bed peristome 16b, The opening restricting part which regulates the opening of said suction grill 4 to this connecting member 19 at the size in which the removal operation of said filter 15 is possible and, which cannot insert fingers, When providing the positioning part which holds said suction grill 4 to a closed condition and carrying out the open operation of the suction grill 4 at the time of filter replacement, In [ while the suction grill 4 is regulated by the opening restricting part of the connecting member 19 by the size in which the opening of the removal operation of the filter 15 is possible and which cannot insert fingers ] the time of stoppage of the suction grill 4, Since the closed condition was held by the positioning part of the connecting member 19, can perform exchange of the filter 15 easily, but. Fingers can be put into the method of the inside of the casing 1, safety will improve, the connecting member 19 which is one member can perform opening regulation of the suction grill 4, and closed condition maintenance of the suction grill 4, and it is effective in the ability to attain coexistence with reservation of safety, and reduction of component cost. And if the connecting member 19 is removed from the suction grill 4, the suction grill 4 can be opened freely and can perform easily maintenance inspection of the apparatus of the fan 2 grade currently allocated by the method of the inside of the casing 1.

[0035]While constituting from a member of the hairpin shape which consists of the U character shaped part [ as / in the invention of claim 2 ] 19c which connects the end of the straight parts 19a and 19b of a couple, and these straight parts 19a and 19b for said connecting member 19, It becomes structurally easy when it is constituted from the heights 25 and 25 of the couple which made said positioning part for relativity the straight parts 19a and 19b of the couple of said connecting member 19, and was formed, while said opening restricting part is constituted from the U character shaped part 19c of said connecting member 19.

[0036]As in the invention of claim 3, said connecting member 19 and said suction grill 4, Since engagement to the connecting member 19 and the suction grill 4 cannot be canceled if a tool etc. are not used when it joins together by the coupling means 24 by which connection release is carried out only when a tool etc. are used, it is lost that the suction grill 4 is opened wide carelessly.

[0037]When a slip off stop means 26 to prevent omission from said suspending portion 18 of said connecting member 19 in the state [ as / in the invention of claim 4 ] where combination with this connecting member 19 and said suction grill 4 was canceled to said connecting member 19 is attached, It is lost that the connecting member 19 falls out in the casing 1, and workability when returning the suction grill 4 from an opened condition improves.

[0038]As in the invention of claim 5, in the lower end part of said suction grill 4. When the lock projection 28 of which it is engaged to the locking hole 27 formed in the lower end peristome 16a of said intake opening 16, and becomes an opening-and-closing fulcrum of this suction grill, and said engagement is canceled at the time of the open operation more than the prescribed opening of said suction grill 4 is formed, It becomes possible to remove the suction grill 4 more than a prescribed opening, and various maintenance inspection services inside from the intake opening 16 can be offered easily.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is a perspective view showing the state where the suction grill of the floor type air conditioner concerning the embodiment of the invention in this application was opened.

[Drawing 2] It is drawing of longitudinal section of the floor type air conditioner concerning the embodiment of the invention in this application.

[Drawing 3] It is an important section expansion perspective view showing the state where the suction grill of the floor type air conditioner concerning the embodiment of the invention in this application was opened.

[Drawing 4] It is an expansion side view showing the connecting member in the floor type air conditioner concerning the embodiment of the invention in this application.

[Drawing 5] It is a top view showing the connecting member in the floor type air conditioner concerning the embodiment of the invention in this application.

[Drawing 6] It is an important section expanded sectional view showing the state at the time of suction grill stoppage of the floor type air conditioner concerning the embodiment of the invention in this application.

[Drawing 7] It is an important section expanded sectional view showing the state at the time of filter extraction of the floor type air conditioner concerning the embodiment of the invention in this application.

[Drawing 8] It is an important section expanded sectional view showing the state at the time of suction grill removal of the floor type air conditioner concerning the embodiment of the invention in this application.

[Description of Notations]

As for a fan and 3, a suction grill and 5 for 1 a heat exchanger and 4 a casing and 2 A blow-off grill, As for a filter and 16, the lower end peristome and 16b for 15 an intake opening and 16a The upper bed peristome, 18 -- a suspending portion and 19 -- a connecting member, and 19a and 19b -- a straight part and 19c -- U character shaped part and 20 -- a locking piece and 21 -- an engaging hole and 22 -- a locking rod and 23 -- a boss and 24 -- a coupling means (screw) and 25 -- heights and 26 -- a slip off stop means and 27 -- a locking hole and 28 -- a lock projection.

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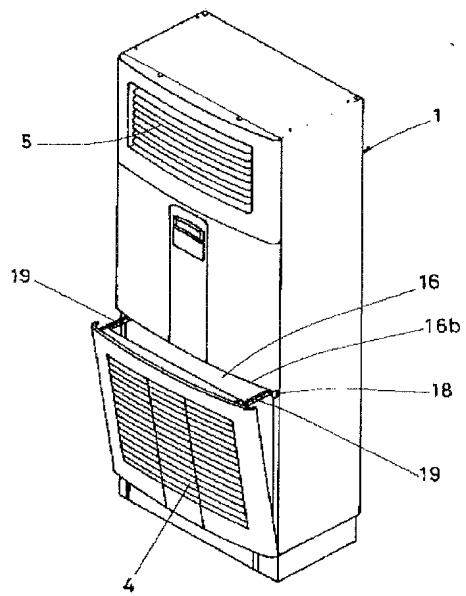
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## DRAWINGS

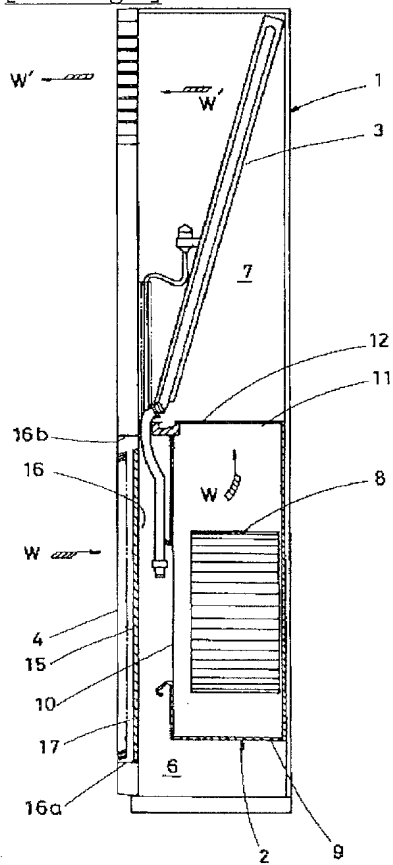
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[Drawing 1]

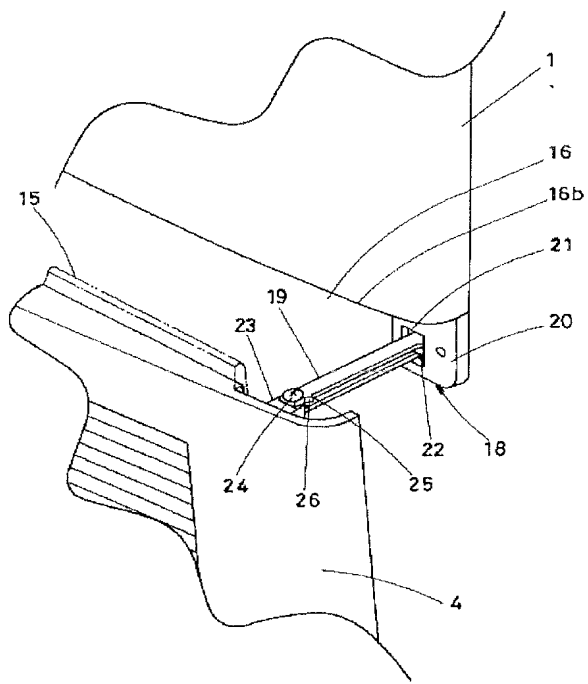




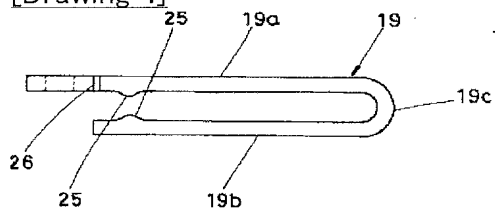
[Drawing 2]



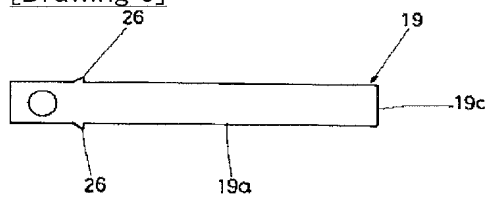
[Drawing 3]



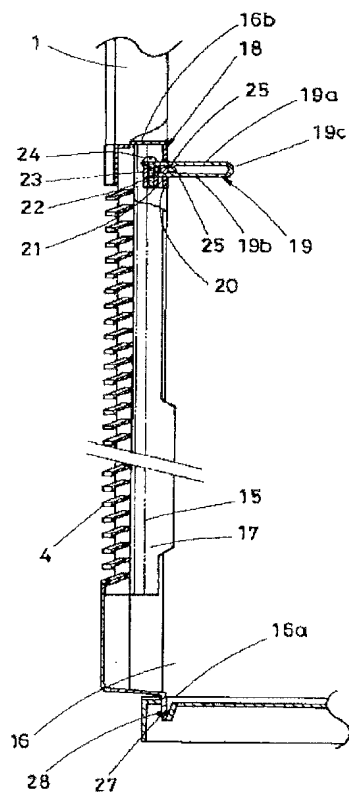
[Drawing 4]



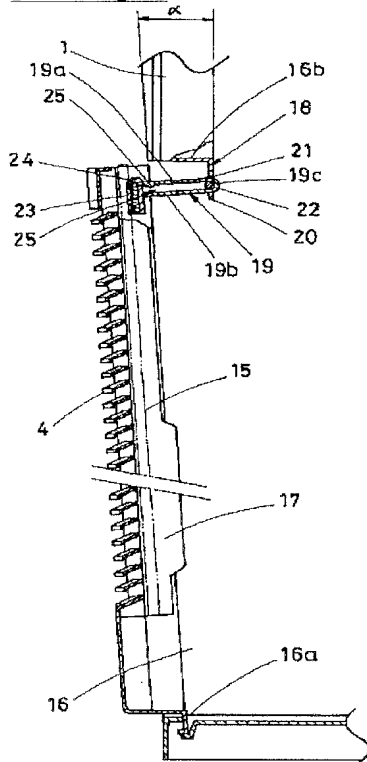
[Drawing 5]



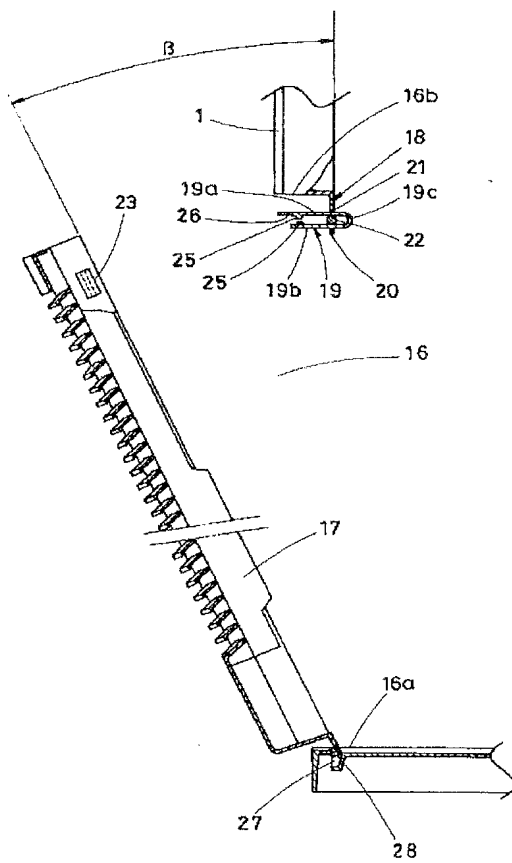
[Drawing 6]



[Drawing 7]



[Drawing 8]



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[Translation done.]

(19) 日本国特許庁 (J P)

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(71) 出願人 000002853

ダイキン工業株式会社

大阪府大阪市北区中崎西2丁目4番12号

梅田センタービル

(72) 発明者 森實 哲也

大阪府堺市金岡町1304番地 ダイキン工業

株式会社堺製作所金岡工場内

(72) 発明者 佐藤 義和

大阪府堺市金岡町1304番地 ダイキン工業

株式会社堺製作所金岡工場内

(74) 代理人 100075731

弁理士 大浜 博

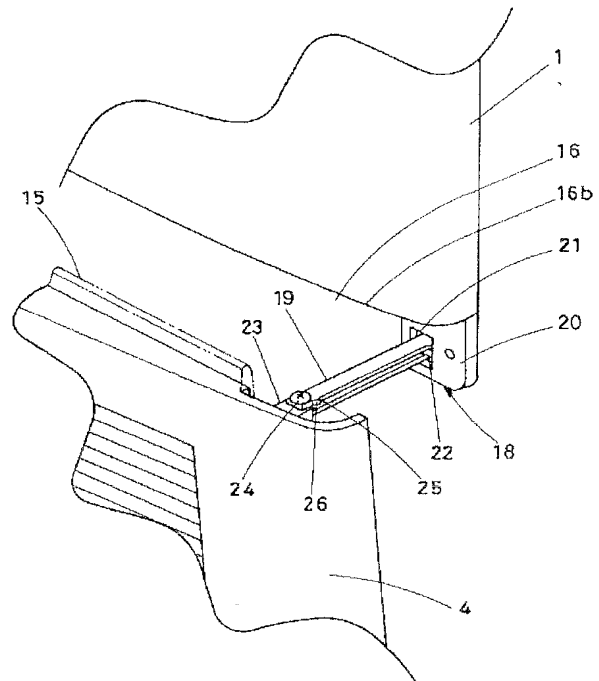
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(54) 【発明の名称】 床置型空気調和機

(57) 【要約】

【課題】 一つの部材で吸込グリルの開度規制と閉止状態保持とを行い得るようにし、もって安全性とコスト低減とを両立させる。

【解決手段】 床置型空気調和機において、吸込グリル4の上端部と前記吸込開口16の上端口縁16bとを、一端が前記吸込グリル4に取り外し自在に結合され、他端が前記吸込開口上端口縁16bに設けられた係止部18に係合される連結部材19で連結するとともに、該連結部材19に、前記吸込グリル4の開度を前記フィルター15の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制する開度規制部と、前記吸込グリル4を閉止状態に保持する位置決め部とを設けて、フィルター交換時に吸込グリル4を開操作される際には、吸込グリル4が連結部材19の開度規制部によりその開度がフィルター15の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制されるとともに、吸込グリル4の閉止時においては、連結部材19の位置決め部により閉止状態が保持されるようにしている。



## 【特許請求の範囲】

【請求項1】 ケーシング(1)内に送風機(2)および熱交換器(3)を配設してなり、前記ケーシング

(1)前面には、前記送風機(2)の前面側に位置する吸込開口(16)を形成するとともに、該吸込開口(16)には、上方から取り出し自在なフィルター(15)を備えた吸込グリル(4)をその下端部を支点として開閉自在に設けた床置型空気調和機であって、前記吸込グリル(4)の上端部と前記吸込開口(16)の上端口縁(16b)とを、一端が前記吸込グリル(4)に取り外し自在に結合され、他端が前記吸込開口上端口縁(16b)に設けられた係止部(18)に係合される連結部材(19)で連結するとともに、該連結部材(19)には、前記吸込グリル(4)の開度を前記フィルター(15)の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制する開度規制部と、前記吸込グリル(4)を閉止状態に保持する位置決め部とを設けたことを特徴とする床置型空気調和機。

【請求項2】 前記連結部材(19)を、一対の直線部(19a)、(19b)と該直線部(19a)、(19b)の一端を連結するU字状部(19c)とからなるヘアピン形状の部材で構成するとともに、前記開度規制部を、前記連結部材(19)のU字状部(19c)で構成する一方、前記位置決め部を、前記連結部材(19)の一対の直線部(19a)、(19b)に相対向して形成された一対の凸部(25)、(25)で構成したことを特徴とする前記請求項1記載の床置型空気調和機。

【請求項3】 前記連結部材(19)と前記吸込グリル(4)とを、工具等を使用した場合にのみ結合解除される結合手段(24)により結合したことを特徴とする前記請求項1および請求項2のいずれか一項記載の床置型空気調和機。

【請求項4】 前記連結部材(19)には、該連結部材(19)と前記吸込グリル(4)との結合を解除した状態において前記連結部材(19)の前記係止部(18)からの脱落を防止する抜け止め手段(26)を付設したことを特徴とする前記請求項1ないし請求項3のいずれか一項記載の床置型空気調和機。

【請求項5】 前記吸込グリル(4)の下端部には、前記吸込開口(16)の下端口縁(16a)に形成された係止穴(27)に対して係合されて該吸込グリル(4)の開閉支点となり且つ前記吸込グリル(4)の所定開度以上の開操作時において前記係合が解除される係止突起(28)を設けたことを特徴とする前記請求項1ないし請求項4のいずれか一項記載の床置型空気調和機。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本願発明は、床置型空気調和機に関し、さらに詳しくは床置型空気調和機における吸込グリルの開度規制構造に関するものである。

## 【0002】

【従来の技術】一般に、床置型空気調和機は、縦長の直方体形状のケーシング内に送風機および熱交換器を配設し、前記ケーシングの前面に設けられた吸込グリルから吸い込まれた室内空気を前記熱交換器により冷却あるいは加熱して得られた調和空気を前記ケーシングの前面に設けられた吹出グリルから室内へ吹き出すように構成されている(例えば、実開平1-167544号公報参照)。

【0003】ところで、床置型空気調和機においては、熱交換器の風下側(即ち、吹出グリル側)に送風機を配設するタイプと、熱交換器の風上側(即ち、吸込グリル側)に送風機を配設するタイプとの2種類がある。また、吸込グリルには、吸込空気の除塵を行うためのフィルターが内蔵されているため、フィルターの交換を行う必要があって吸込グリルをケーシングに対して開閉自在とする必要がある。

【0004】ところが、上記したように吸込グリルを開閉自在とした場合、その開度を自由にしておくと、吸込グリルが大きく開操作された時に、その開口部から誤って手を内方に挿入するおそれがあり、内方に送風機等の回転機械が配設されていると、手が回転機械に触れる可能性がある。特に、送風機を熱交換器の風上側であってケーシング内の下部に設けたものの場合、吸込グリルの位置が低くなることから、上記した不安がより一層顕著となる。

【0005】また、吸込グリルの内方に送風機等の機器が配設されている場合、これらの機器の保守点検を行う際には、吸込グリルを全開状態とする必要もある。

【0006】そこで、本出願人は、吸込グリルとケーシングとの間に、前記吸込グリルの開度を前記フィルターの着脱操作が可能であり且つ手指の挿入が不可能な大きさに規制するとともに該規制を解除することのできる開度規制手段を介設したものを提案している(特願平8-292896号参照)。

## 【0007】

【発明が解決しようとする課題】ところが、上記先願例の場合、開度規制手段により吸込グリルの開度を規制することはできるものの、吸込グリルの閉止状態を保持するために保持手段として別部材であるマグネットが用いられている。つまり、吸込グリルの開度を規制する開度規制手段と、吸込グリルの閉止状態を保持するマグネットとが必要となり、部品点数の増大、部品コストの増大、組付工数の増大につながる。

【0008】本願発明は、上記の点に鑑みてなされたもので、一つの部材で吸込グリルの開度規制と閉止状態保持とを行い得るようにし、もって安全性とコスト低減とを両立させることを目的とするものである。

## 【0009】

【課題を解決するための手段】請求項1の発明、上記課

題を解決するための手段として、ケーシング 1 内に送風機 2 および熱交換器 3 を配設してなり、前記ケーシング 1 前面に、前記送風機 2 の前面側に位置する吸込開口 16 を形成するとともに、該吸込開口 16 に、上方から取り出し自在な着脱自在なフィルター 15 を備えた吸込グリル 4 をその下端部を支点として開閉自在に設けた床置型空気調和機において、前記吸込グリル 4 の上端部と前記吸込開口 16 の上端口縁 16b とを、一端が前記吸込グリル 4 に取り外し自在に結合され、他端が前記吸込開口上端口縁 16b に設けられた係止部 18 に係合される連結部材 19 で連結するとともに、該連結部材 19 に、前記吸込グリル 4 の開度を前記フィルター 15 の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制する開度規制部と、前記吸込グリル 4 を閉止状態に保持する位置決め部とを設けている。

【0010】上記のように構成したことにより、フィルター交換時には、吸込グリル 4 を開操作するが、その際吸込グリル 4 は連結部材 19 の開度規制部によりその開度がフィルター 15 の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制される。従って、フィルター 15 の交換は容易に行うことができるが、手指をケーシング 1 内方に入れることができず、不用意に内方に位置する送風機 2 等の回転機械に触れるということがなくなる。また、吸込グリル 4 の閉止時においては、連結部材 19 の位置決め部により閉止状態が保持されることとなる。つまり、一部材である連結部材 19 により吸込グリル 4 の開度規制と、吸込グリル 4 の閉止状態保持とが行えることとなるのである。しかも、連結部材 19 を吸込グリル 4 から取り外せば、吸込グリル 4 は自由に開放できることとなり、ケーシング 1 内方に配設されている送風機 2 等の機器の保守点検を容易に行うことができる。

【0011】請求項 2 の発明におけるように、前記連結部材 19 を、一対の直線部 19a、19b と該直線部 19a、19b の一端を連結する U 字状部 19c とからなるヘアピン形状の部材で構成するとともに、前記開度規制部を、前記連結部材 19 の U 字状部 19c で構成する一方、前記位置決め部を、前記連結部材 19 の一対の直線部 19a、19b に相対向して形成された一対の凸部 25、25 で構成した場合、構造的に簡単となる。

【0012】請求項 3 の発明におけるように、前記連結部材 19 と前記吸込グリル 4 とを、工具等を使用した場合にのみ結合解除される結合手段 24 により結合した場合、工具等を用いなければ連結部材 19 と吸込グリル 4 との係合が解除できないため、不用意に吸込グリル 4 が開放されるということがなくなる。

【0013】請求項 4 の発明におけるように、前記連結部材 19 に、該連結部材 19 と前記吸込グリル 4 との結合を解除した状態において前記連結部材 19 の前記係止部 18 からの脱落を防止する抜け止め手段 26 を付設し

た場合、連結部材 19 がケーシング 1 内に脱落するということがなくなり、吸込グリル 4 を開放状態から復帰させるときの作業性が向上する。

【0014】請求項 5 の発明におけるように、前記吸込グリル 4 の下端部に、前記吸込開口 16 の下端口縁 16a に形成された係止穴 27 に対して係合されて該吸込グリルの開閉支点となり且つ前記吸込グリル 4 の所定開度以上の開操作時において前記係合が解除される係止突起 28 を設けた場合、吸込グリル 4 を、所定開度以上において取り外すことが可能となり、吸込開口 16 から内部への各種保守点検サービスを容易に行うことができる。

【0015】

【発明の実施の形態】以下、添付の図面を参照して、本願発明の好適な実施の形態について詳述する。

【0016】この床置型空気調和機は、図 1 および図 2 に示すように、縦長の直方体形状のケーシング 1 内に送風機 2 および熱交換器 3 を配設し、前記ケーシング 1 の前面下部に形成された吸込開口 16 に設けられた吸込グリル 4 から吸い込まれた室内空気 W を前記熱交換器 2 により冷却あるいは加熱して得られた調和空気 W' を前記ケーシング 1 の前面上部に設けられた吹出グリル 5 から室内へ吹き出すように構成されている。

【0017】前記送風機 2 は、多翼羽根車 8 をスクロールタイプのファンケーシング 9 で被包してなる遠心式送風機とされており、前記吸込グリル 4 の内方に形成された送風機室 6 にその吸込口 10 を前向きとした姿勢で配設されている。そして、前記送風機 2 の吐出口 11 は、前記ケーシング 1 内を前記送風機室 6 と該送風機室 6 の上方に位置する熱交換器室 7 とに仕切る仕切板 12 を貫通して前記熱交換器室 7 に臨まされている。

【0018】前記熱交換器 3 は、前記熱交換器室 7 内を前後方向に仕切り且つ上端が後方に位置し、下端が前方に位置する傾斜姿勢となるように配設されている。符号 13 はドレンパンである。

【0019】そして、前記吸込グリル 4 は、前記吸込開口 16 の下端口縁 16a に対して後に詳述する係止穴 27 と係止突起 28 との係合により下端側を開閉支点として前開き可能とされており、その内部にはフィルター 15 が着脱自在に内蔵されている。該フィルター 15 は、前記吸込グリル 4 に形成されたフィルター枠 17 に対して上端側から挿入および引き出しされることとなっている。

【0020】前記吸込グリル 4 の上端部両側と前記吸込開口 16 の上端口縁 16b とは、図 3 に示すように、一端が前記吸込グリル 4 に取り外し自在に結合され、他端が前記吸込開口上端口縁 16b に設けられた係止部 18 に係合される連結部材 19 で連結されている。

【0021】前記連結部材 19 は、図 4 および図 5 に示すように、一対の直線部 19a、19b と該直線部 19a、19b の一端を連結する U 字状部 19c とからなる

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ヘアピン形状の部材で構成されている。前記連結部材19における上部直線部19aより下部直線部19bはやや短くされている。

【0022】一方、前記係止部18は、前記吸込開口16の上端口縁16bの左右両端部から垂設され且つ前記連結部材19が摺動自在に挿入される係合穴21を有する突片20とされており、該係合穴21には、前記連結部材19の直線部19a、19bにより挟まれる水平な係止棒22が設けられている。

【0023】前記連結部材19の上部直線部19aの端部は、前記吸込グリル4の上端部両側に形成されたボス23に対してビス24により結合されている(図3参照)。つまり、前記連結部材19は、上部直線部19aの端部を前記ボス23にビス止めされるとともに、前記直線部19a、19bを、前記係止棒22を挟み込んだ状態で前記係合穴21に挿入されることにより取り付けられているのである。従って、連結部材19と吸込グリル4との結合を解除するには、ビス24をドライバー等の工具を用いて螺脱しなければならないこととなり、不用意に吸込グリル4が開放されるということがなくな

る。【0024】そして、前記連結部材19における上部直線部19aは、前記吸込グリル4を開操作したとき、前記U字状部19cと係止棒22との係合によりその開度が前記フィルター15の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制され得る長さとなっている。つまり、本実施の形態においては、前記U字状部19cが、吸込グリル4の開度を前記フィルター15の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制する開度規制部として作用することとなっているのである。

【0025】また、前記連結部材19における直線部19a、19bの相対向する面には、図4および図5に示すように、一対の凸部25、25が一体に形成されている。該凸部25、25は、吸込グリル4が閉止された状態において前記係止棒22を乗り越えることができる位置に形成されており、前記凸部25、25が前記係止棒22を乗り越えた状態においては吸込グリル4の閉止状態が保持されることとなっている。つまり、前記凸部25、25が吸込グリル4の閉止状態を保持する位置決め部として作用することとなっているのである。

【0026】さらに、前記連結部材19における上部直線部19aの両側面には、図4および図5に示すように、該連結部材19と前記吸込グリル4との結合を解除した状態において前記連結部材19が前記係止部(具体的には、係合穴20)から脱落するのを防止する抜け止め手段として作用する突起26、26が一体に形成されている。該突起26、26は、連結部材19の上部直線部19aを係合穴20に挿入する際には容易に挿入できるが、抜け方向に摺動した場合には係合穴20の口縁に

係止される形状(即ち、楔形状)とされている。このようにすると、連結部材19がケーシング1内に脱落するということがなくなり、吸込グリル4を開放状態から復帰させるときの作業性が向上する。

【0027】前記吸込グリル4の下端部には、図6に示すように、前記吸込開口16の下端口縁16aに形成された係止穴27に対して係合されて該吸込グリル4の開閉支点となり且つ前記吸込グリル4の所定開度以上の開操作時において前記係合が解除される係止突起28が設けられている。このようにすると、吸込グリル4を、所定開度以上において取り外すことが可能となり、吸込開口16から内部への各種保守点検サービスを容易に行うことができる。

【0028】上記のように構成された床置型空気調和機において、次のような作用効果が得られる。

【0029】吸込グリル4の閉止時には、図6に示すように、連結部材19は吸込開口16の左右両側において内方へ押し込まれた状態とされるため、吸込グリル4を介して吸い込まれる室内空気Wの邪魔になることはなく、流通抵抗や音を増大させるおそれはない。この時、連結部材19における位置決め部として作用する凸部25、25は、係止部18における係止棒22を乗り越えて係合されることとなり、吸込グリル4の開操作方向への動作ができない状態(即ち、吸込グリル4が閉止保持状態)とされる。

【0030】空気調和機の運転によりフィルター15に塵埃等が付着して目詰まりを起こすと、空気調和機の能力に影響するところから、フィルター15を交換する必要がある。このときには吸込グリル4が開操作されるが、連結部材19が吸込グリル4の開操作に伴って前方へ摺動することとなり、図7に示すように、開度規制部として作用するU字状部19cが係止部18における係止棒22に係合される。この状態においては、吸込グリル4の開度 $\alpha$ が前記フィルター15の取り出し操作が可能であり且つ手指の挿入が不可能な大きさ(例えば、約3°)に規制される。従って、フィルター15を吸込グリル4の上方側から容易に引き出しあるいは挿入することができるが、吸込グリル4の開度が規制されているため、ユーザが不用意にケーシング1内方へ手指を挿入することはなくなる。つまり、フィルター15の交換は容易に行えるが、ユーザの手指が吸込グリル4の内方に位置する送風機6等の回転機械に触れることはなくなり、安全性が向上するのである。

【0031】ところで、吸込グリル4を開放して内方に位置する機器(例えば、送風機2、配管等)に対する保守点検を行うことがあるが、その際には、前記ビス24をドライバー等の工具により螺脱すると、図8に示すように、吸込グリル4と連結部材19との結合が解除される。従って、吸込グリル4は開度規制が解除されて、自由に開放されることとなり、前記保守点検作業を容易に



行うことができる。

【0032】前記吸込グリル4が所定開度 $\beta$ 以上に開操作されると、その下端部に形成された係止突起28が吸込開口16の下端口縁16aに形成された係止穴27から逸脱することとなり、吸込グリル4を吸込開口16から取り外すことができることとなり、吸込開口16から内部への各種保守点検サービスを容易に行うことができる。

【0033】上記実施の形態においては、連結部材19をヘアピン形状の部材で構成するようにしているが、連結部材19は、他の形状とすることもできる。

【0034】

【発明の効果】請求項1の発明によれば、ケーシング1内に送風機2および熱交換器3を配設してなり、前記ケーシング1前面に、前記送風機2の前面側に位置する吸込開口16を形成するとともに、該吸込開口16に、上方から取り出し自在な着脱自在なフィルター15を備えた吸込グリル4をその下端部を支点として開閉自在に設けた床置型空気調和機において、前記吸込グリル4の上端部と前記吸込開口16の上端口縁16bとを、一端が前記吸込グリル4に取り外し自在に結合され、他端が前記吸込開口上端口縁16bに設けられた係止部18に係合される連結部材19で連結するとともに、該連結部材19に、前記吸込グリル4の開度を前記フィルター15の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制する開度規制部と、前記吸込グリル4を閉止状態に保持する位置決め部とを設けて、フィルター交換時に吸込グリル4を開操作される際には、吸込グリル4が連結部材19の開度規制部によりその開度がフィルター15の取り外し操作が可能であり且つ手指の挿入が不可能な大きさに規制されるとともに、吸込グリル4の閉止時においては、連結部材19の位置決め部により閉止状態が保持されるようにしたので、フィルター15の交換は容易に行うことができるが、手指をケーシング1内方に入れることができないこととなり、安全性が向上するし、一部材である連結部材19により吸込グリル4の開度規制と、吸込グリル4の閉止状態保持とが行えることとなり、安全性の確保と部品コストの低減との両立を達成できるという効果がある。しかも、連結部材19を吸込グリル4から取り外せば、吸込グリル4は自由に開放できることとなり、ケーシング1内方に配設されている送風機2等の機器の保守点検を容易に行うことができる。

【0035】請求項2の発明におけるように、前記連結部材19を、一対の直線部19a、19bと該直線部19a、19bの一端を連結するU字状部19cとからなるヘアピン形状の部材で構成するとともに、前記開度規制部を、前記連結部材19のU字状部19cで構成する一方、前記位置決め部を、前記連結部材19の一対の直線部19a、19bに相対向して形成された一対の凸部

25、25で構成した場合、構造的に簡単となる。

【0036】請求項3の発明におけるように、前記連結部材19と前記吸込グリル4とを、工具等を使用した場合にのみ結合解除される結合手段24により結合した場合、工具等を用いなければ連結部材19と吸込グリル4との係合が解除できないため、不用意に吸込グリル4が開放されるということがなくなる。

【0037】請求項4の発明におけるように、前記連結部材19に、該連結部材19と前記吸込グリル4との結合を解除した状態において前記連結部材19の前記係止部18からの脱落を防止する抜け止め手段26を付設した場合、連結部材19がケーシング1内に脱落するということがなくなり、吸込グリル4を開放状態から復帰させるときの作業性が向上する。

【0038】請求項5の発明におけるように、前記吸込グリル4の下端部に、前記吸込開口16の下端口縁16aに形成された係止穴27に対して係合されて該吸込グリルの開閉支点となり且つ前記吸込グリル4の所定開度以上の開操作時において前記係合が解除される係止突起28を設けた場合、吸込グリル4を、所定開度以上において取り外すことが可能となり、吸込開口16から内部への各種保守点検サービスを容易に行うことができる。

【図面の簡単な説明】

【図1】本願発明の実施の形態にかかる床置型空気調和機の吸込グリルを開いた状態を示す斜視図である。

【図2】本願発明の実施の形態にかかる床置型空気調和機の縦断面図である。

【図3】本願発明の実施の形態にかかる床置型空気調和機の吸込グリルを開いた状態を示す要部拡大斜視図である。

【図4】本願発明の実施の形態にかかる床置型空気調和機における連結部材を示す拡大側面図である。

【図5】本願発明の実施の形態にかかる床置型空気調和機における連結部材を示す平面図である。

【図6】本願発明の実施の形態にかかる床置型空気調和機の吸込グリル閉止時の状態を示す要部拡大断面図である。

【図7】本願発明の実施の形態にかかる床置型空気調和機のフィルター取出時の状態を示す要部拡大断面図である。

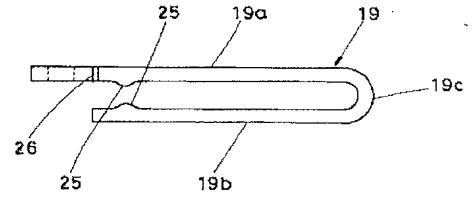
【図8】本願発明の実施の形態にかかる床置型空気調和機の吸込グリル取り外し時の状態を示す要部拡大断面図である。

【符号の説明】

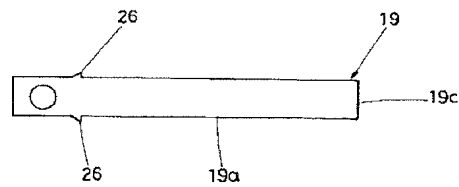
1はケーシング、2は送風機、3は熱交換器、4は吸込グリル、5は吹出グリル、15はフィルター、16は吸込開口、16aは下端口縁、16bは上端口縁、18は係止部、19は連結部材、19a、19bは直線部、19cはU字状部、20は係止片、21は係合穴、22は係止棒、23はボス、24は結合手段（ビス）、25は

凸部、26は抜け止め手段、27は係止穴、28は係止\* \*突起。

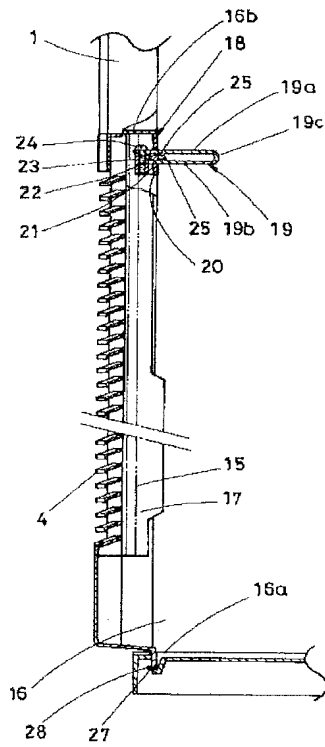
【図4】



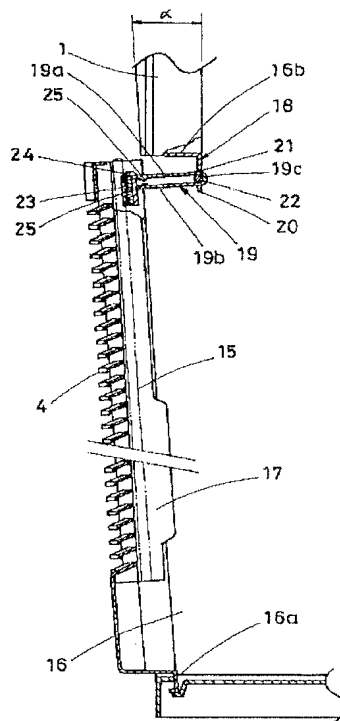
【図 5】



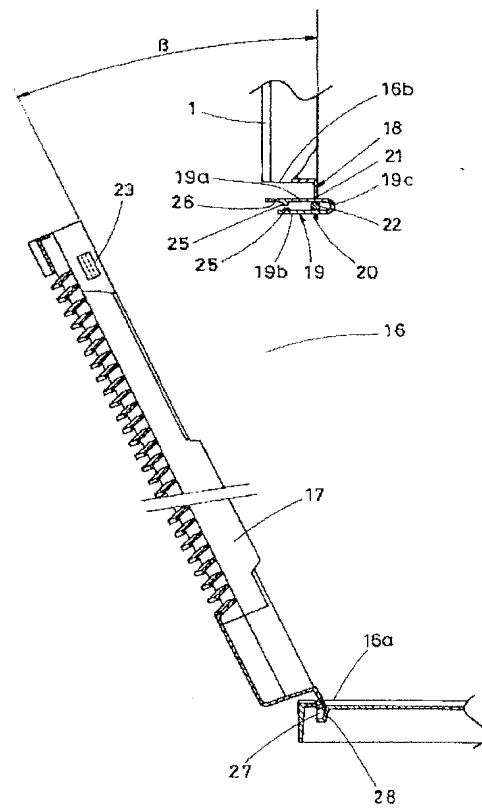
【図6】



【図7】



【図8】



フロントページの続き

(72)発明者 田中 俊行  
大阪府堺市金岡町1304番地 ダイキン工業  
株式会社堺製作所金岡工場内

Fターム(参考) 3L051 BG06 BH06